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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/789,699

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EXAMINER

JOYNER, KEVIN

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/789,699	Applicant(s) USLENGHI ET AL.	
	Examiner KEVIN C. JOYNER	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12-16 and 21-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-16 and 21-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 June 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 12, 2008 has been entered.

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 2, 7-10, 12-16, 21-23, 25, 27 and 29 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Arts et al. (U.S. Publication No. 2004/0146437).

Arts et al. discloses an indoor air quality module comprising:

A compartment having an inlet and an outlet;

A monolith (referenced as a filter, 12) located between the inlet and the outlet;

An ultraviolet light source (54) which directs ultraviolet light towards the monolith;

and

A shield (56a-b) positioned on an opposite side of the monolith from the ultraviolet light source, wherein the shield includes a planar portion, the monolith defines a monolith height, the shield defines a shield height, and the shield height is less than the monolith height as shown in Figures 1 & 4. More specifically, Figure 4 is a detailed view of the filter (12) as shown in Figure 1, wherein the height of the filter is defined by the case (36). As shown in Figure 4, each shield (56a-b) comprises a height that is smaller than the filter (12). Concerning the limitations of a photocatalytic coating, although the embodiments described in the Figures are not provided with said coating, Arts specifically discloses that photocatalytic coatings are used as desired on the monolith in paragraph 53. Therefore, the limitations are met with respect to Arts. Regarding claim 2, the shields of Arts are capable of reflecting the ultraviolet light that passes through the monolith towards the monolith to minimize leakage of the ultraviolet light from the module (paragraphs 14, 17 and 49).

With regard to claims 7-9, the reference continues to disclose that the shield has upper and lower edges, and wherein the upper and lower edges define a upper and lower gap that are substantially equal in height with respect to the upper and lower portions of the compartment as shown in Figure 4. More specifically, shield (56b) located approximately directly in the center of the compartment satisfies these limitations as set forth. Concerning claim 10, Arts also discloses that the monolith comprise first and second monoliths and that the ultraviolet light source is located between the first and second monoliths as shown in Figure 4. More specifically, the monolith (12) is divided into chambers by separate individual monoliths that comprise a

Art Unit: 1797

mesh to filter contaminants in the air (paragraphs 53 and 59), wherein each monolith is defined by an upstream side (12a) and a downstream side (12b). As shown in Figure 4, three of the five ultraviolet light sources are located between two opposing monoliths, and therefore meet the limitations of the claim.

Claims 12 and 13 further requires that the that the shield height is determined by the equation;

$$H = 2 \cdot D \cdot \tan(\alpha)$$

Wherein H is defined as the shield height, D is defined as a distance between the ultraviolet light source and the shield, and α is defined as a maximum angle from horizontal that ultraviolet light can pass through the monolith without contacting the monolith. However, it would have been well within the purview of one of ordinary skill in the art to optimize the shield height with respect to the distance and angle as set forth above in order to provide optimal reflectivity and limit the amount of air that is blocked by the shields when passing through the module. Only the expected results would be attained.

Regarding claim 14, Arts discloses an indoor air quality module (Figure 1) comprising:

A compartment having an inlet and outlet;

A first monolith located between the inlet and the outlet of the compartment and having a monolith height;

A second monolith located between the inlet and the outlet of the compartment and having a monolith height (four monoliths are shown in Figure 4, wherein each are defined by an upstream side (12a) and downstream side (12b));

An ultraviolet light source (54) adjacent the first monolith and the second monolith which directs UV light towards the first and second monolith;

A first shield (56b) having a shield height less than the monolith height, wherein the first shield includes a planar portion; and

A second shield (56a) having the shield height and the planar portion,

Wherein the first monolith and the second monolith are located between the first shield and the second shield, the first shield capable of reflecting the ultraviolet light that passes through the first monolith towards the first monolith to minimize leakage of the ultraviolet light from the module, and the second shield capable of reflecting the ultraviolet light that passes through the second monolith towards the second monolith to minimize leakage of the ultraviolet light from the module. Regarding claim 15, the limitations are met with respect to claims 7-9 above. Therefore, their explanations are relied upon as necessary.

Claim 16 further requires that the that the shield heights are determined by the distances between the ultraviolet light source and the shields as well as a maximum angle from horizontal that ultraviolet light can pass through the monoliths without contacting the monoliths. However, it would have been well within the purview of one of ordinary skill in the art to optimize the shield height with respect to the distance and angle as set forth above in order to provide optimal reflectivity and limit the amount of

Art Unit: 1797

air that is blocked by the shields when passing through the module. Only the expected results would be attained.

Regarding claims 21 and 25, Arts continues to disclose that the shield is continuous such that air does not pass through the interior of the shield (paragraph 17 and 49). Concerning claim 22, as broadly defined, the shield (56a-b) is substantially parallel to the monolith (12). It is important to note that the monolith as a whole (12) is parallel with the shields of the invention. Regarding claims 27 and 29, Arts also discloses that the monoliths and shields are substantially parallel (as shown in Figure 4), and the ultraviolet light source is located between the monoliths (as described above with respect to claim 10).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arts et al. (U.S. Publication No. 2004/0146437) in view of Say et al. (U.S. Patent No. 5,790,934).

Arts is relied upon as set forth above. Arts does not appear to disclose that the photocatalytic coating is titanium dioxide. However, titanium dioxide is a commonly used and conventionally known material for photocatalytic coating in the art of purifying air. Say discloses an indoor air quality module comprising: a compartment having an

Art Unit: 1797

inlet and an outlet; a monolith located between the inlet and the outlet; a photocatalytic coating on the monolith; and an ultraviolet light source which directs ultraviolet light towards the photocatalytic coating (Figures 1-9; column 2, lines 35-47). The reference continues to disclose that the photocatalytic coating is titanium dioxide (column 5, lines 52-55). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Arts to utilize titanium dioxide as the photocatalytic coating, as such is commonly used and a conventionally known material for a photocatalytic coating in the art of purifying air as exemplified by Say.

5. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arts et al. (U.S. Publication No. 2004/0146437) in view of Ichikawa (U.S. Patent No. 6,421,915).

Arts is relied upon as set forth above. Arts does not appear to disclose that the monolith comprises a honeycomb shape with a plurality of hexagonal passages.

Ichikawa discloses a monolith coated with a catalyst that is utilized in indoor air quality modules wherein the monolith comprises a honeycomb shape with a plurality of hexagonal passages in order to provide effective purifiability of air quality while decreasing the amount of pressure loss within the system (column 3, lines 10-39).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the monolith of Arts to include a honeycomb shape with a plurality of hexagonal passages in order to provide effective purifiability of air quality while decreasing the amount of pressure loss within the system as exemplified by Ichikawa.

Art Unit: 1797

6. Claims 6, 24 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arts et al. (U.S. Publication No. 2004/0146437) in view of Engel et al. (U.S. Patent No. 6,805,733).

Concerning claim 6, Arts et al. is relied upon as set forth in reference to claim 1 above. Arts et al. does not appear to disclose that the shield comprises a sheet metal. Engel discloses an indoor air quality module comprising an apparatus including an ultraviolet light source and a set of shields for said ultraviolet light source (column 3, lines 1-22; Figures 1-3). The reference continues to disclose that the shields comprise a sheet metal in order to adequately reflect the ultraviolet radiation. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the shield of Arts to comprise a sheet metal in order to adequately reflect the ultraviolet radiation as exemplified by Engel.

Arts et al. is relied upon as set forth in reference to claims 1 and 14 above, wherein Arts continues to disclose that the shield includes a first edge and a second edge that are substantially parallel and a third edge and a fourth edge that are substantially parallel, wherein the height is defined by the third and fourth edge and a space is defined between each of the third edge and the fourth edge and the compartment as shown in Figure 5. Furthermore, the reference also discloses that the shields are supported by the housing of the unit (paragraph 51). More specifically, in light of the Applicant's specification, the shield of Arts comprises six edges. The first and second edges are the edges that connect the shield to the housing of the decontamination unit, which are parallel. The third and fourth edges of the shield are

Art Unit: 1797

the edges that connect the parallel portion of the shield (with respect to the UV light), to the diagonal portions of the shield. As shown in Figure 5, these edges are parallel with each other as well and further define a space between said third and fourth edges and the compartment housing. Arts does not appear to specifically disclose how the shields are supported/connected to the housing. However, it is extremely well known in the art to connect a set of shields to a support member (such as a compartment) with a fastener. Engel discloses an indoor air quality module comprising an apparatus including an ultraviolet light source and a set of shields for said ultraviolet light source (column 3, lines 1-22; Figures 1-3). The reference continues to disclose that the shields are connected to a housing by fasteners in order to support and stabilize the shield members in the module (column 5, lines 39-46; Figure 2). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to connect the shield to the compartment housing by fasteners in order to support and stabilize the shield members in the module as exemplified by Engel.

7. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arts et al. (U.S. Publication No. 2004/0146437) in view of Bigelow (U.S. Patent No. 6,500,387).

8. Arts is relied upon as set forth in reference to claim 14 above, wherein Bigelow discloses that the monolith comprises a plurality of monoliths in a V-shaped configuration as shown in Figure 5. Thus Arts does not appear to disclose that the monoliths are substantially parallel to the shields. Bigelow discloses an indoor air quality module comprising: a compartment having an inlet and an outlet; a plurality of

Art Unit: 1797

monoliths (20 & 22) located between the inlet and the outlet; a photocatalytic coating on the monolith (column 12, lines 1-10); an ultraviolet light source (50) which directs ultraviolet light towards the photocatalytic coating; and a shield (26) adjacent the monolith as shown in Figures 2 & 2A. The reference continues to disclose that the shield comprises a sheet metal (column 12, lines 10-16), and that the monoliths are comprised of a coarse monolith and a fine monolith in order to trap large particulates separately from smaller particulates (column 11, lines 40-65). The reference continues to disclose that the monoliths are mounted in a configuration that is substantially parallel with the shields (as shown in Figures 1-6) in order to prevent the contaminated air from passing through the module without entering both the coarse and fine monolith. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Arts to provide the monoliths in a parallel configuration with the shields in order to prevent the contaminated air from passing through the module without entering both of the monoliths as exemplified by Bigelow.

Double Patenting

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct

Art Unit: 1797

from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Claims 1-5 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, and 8-12 of copending Application No. 10/788845 in view of Arts et al. (U.S. Publication No. 2004/0146437). Claims 1-3 and 8-12 of Application No. 10/788845 disclose all of the limitations of claims 1-5 from the instant application except for the shield positioned on an opposite side of the monolith from the ultraviolet light source. However, as discussed above, Arts discloses a shield positioned on an opposite side of the monolith from the

Art Unit: 1797

ultraviolet light source in an indoor air quality module. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify '845 to include a shield positioned on an opposite side of the monolith from the ultraviolet light source in order to reflect the unused ultraviolet light towards the monolith as exemplified by Arts.

This is a provisional obviousness-type double patenting rejection.

11. Claims 1-5 and 10 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, and 10-12 of copending Application No. 10/789962 in view of Arts et al. (U.S. Publication No. 2004/0146437). Claims 1-3 and 10-12 of Application No. 10/789962 disclose all of the limitations of claims 1-5 and 10 from the instant application except for the shield positioned on an opposite side of the monolith from the ultraviolet light source. However, as discussed above, Arts discloses a shield positioned on an opposite side of the monolith from the ultraviolet light source in an indoor air quality module. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify '962 to include a shield positioned on an opposite side of the monolith from the ultraviolet light source in order to reflect the unused ultraviolet light towards the monolith as exemplified by Arts.

This is a provisional obviousness-type double patenting rejection.

Response to Arguments

12. Applicant's arguments with respect to claims 1 and 14 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEVIN C. JOYNER whose telephone number is (571)272-2709. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KCJ

/Jill Warden/
Supervisory Patent Examiner, Art Unit 1797